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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/446,144	03/02/2000	CARLO RUBBIA	P5634	1854

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EXAMINER

KEITH, JACK W

ART UNIT	PAPER NUMBER
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3641

DATE MAILED: 02/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/446,144

Applicant(s)

Rubbia

Examiner

Jack Keith

Art Unit

3641



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Apr 14, 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above, claim(s) 10, 11, 13-16, 26, 27, 29, 30, and 33-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 12, 17-25, 28, 31, and 32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Mar 2, 2000 is/are a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

Art Unit: 3641

## **DETAILED ACTION**

### ***Request for Continued Examination***

1. The request filed on 12/5/2003 for a Request for Continued Examination (RCE) under 37 CFR 1.114 based on parent Application No. 09/446,144 is acceptable and a RCE has been established. An action on the RCE follows.

It is noted that applicant's election of species II (figure 7b), A, a, v and BB in Paper No. 12 is carried forward in the RCE.

### ***Response to Arguments***

2. Applicant's arguments filed 12/5/2003 have been fully considered.

The 112, first paragraph rejections regarding the exposed material distribution in the diffusing medium is withdrawn by the examiner. Upon review of applicant's arguments an error on the part of the examiner is noted. The diffusing medium (12 of figure 7b and 3 of figure 7a) are physically separated from the activity volume (4 of figure 7a, not shown of figure 7b) containing the exposed material. Thus the 112, first rejection in regard to target consistency of exposed material distributed within the diffusing medium is not applicable.

The 112, rejection of claim 5 is also withdrawn; however, a rejection to the elected embodiment figure 7b follows below as not showing all features described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).

Art Unit: 3641

The 112, second paragraph rejection regarding the phrase "arranged so that" is withdrawn as applicant canceled said language.

With regard to the 112, second paragraph rejections of the terms "portion" and "region" the rejections are maintained, but expounded upon below.

Regarding the 102 rejection utilizing Bowman applicant argues that the diffusing medium of Bowman is not capable of being transparent to neutrons. Applicant argues the definition of transparency. Citing the specification definition of transparency as being mostly elastic scattering reactions occurring in his diffusing medium. Applicant argues that the Bowman reference utilizes a diffusing medium wherein inelastic scattering dominates and thus by applicant's definition of transparency Bowman is not applicable.

First, while applicant is correct in citing the MPEP § 2173.05(a) wherein the specification states the meaning that a term in the claim is intended to have, the claim is examined using that meaning applicant must remember that the term used cannot be repugnant. Second, applicant cites only a portion of the claimed transparency definition. Pages 2-3 disclose two steps (1) and (2). Step (1) (page 3, lines 3+) further cites a doping of the diffusing medium making it "cloudy" and consequently allowing for neutron capture by the subject impurities. Thus, as specified by applicant's own specification neutron capture is occurring within the diffusing medium. Therefore the diffusing medium is truly not elastic. Third and more importantly there is no indication of what, how much, etc. impurities are present within the diffusing medium. A new 112, first paragraph rejection follows below.

Art Unit: 3641

As set forth above the definition of transparency cannot be repugnant to that established in the prior art. Per A glossary of Terms in Nuclear Science and Technology, 1957 the term transparency is defined as being to permit the passage of radiation particles. No mention of elastic or inelastic scattering is present in the definition. While applicant may be his or her own lexicographer, a term in a claim may not be given a meaning repugnant to the usual meaning of that term. See In re Hill, 161 F.2d 367, 73 USPQ 482 (CCPA 1947). Thus based on the prior art definition of transparency the diffusing medium of Bowman is capable of meeting applicant's claimed inventive concept.

The 102 (b) rejection utilizing Bowman is herein incorporated by reference.

Applicant's arguments to the 103 rejections set forth in Paper no. 13 and 15 depend directly on the diffusing medium of Bowman not being transparent. As set forth above this is not the case. The 103 rejections are herein incorporated by reference.

### ***Drawings***

3. Drawing 7b is objected to under 37 CFR 1.83(a) because it fails to show the accelerator block (16) of figure 7a and any modifications applicable to embodiment of figure 7b as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Art Unit: 3641

*Specification*

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. The specification is objected to under 35 U.S.C. 112, first paragraph, as failing to provide an adequate written description of the invention and as failing to adequately teach how to make and/or use the invention, i.e. failing to provide an enabling disclosure. Some examples are:

There is no adequate description nor enabling disclosure of the parameters of the specific operative embodiments of the invention. Particularly the diffusing medium as set forth on page 3, lines 3+ of the specification discloses impurities present in the diffusing medium that account for a “cloudy effect” that allows for most of the neutrons to be captured by said impurities. There is no indication of the exact density and ratio of impurities within the diffusing medium. Furthermore it is not seen wherein what constitutes said impurities. Thus without said impurities the diffusing medium cannot function as claimed. That is the transparency of the applicant’s diffusing medium depends on said impurities. Without such knowledge of what constitutes said impurities, their ratio, density, etc. within the diffusing medium one cannot replicate applicant’s claimed invention.

Additionally applicant defines the term [neutron] transparency contrary to the established definition in the art as set forth above in section 2. Thus, there is no indication of how and in what manner applicant ascertains his transparency definition and why this differs from the

Art Unit: 3641

accepted norm. That is one skilled in the art would not associate elastic scattering only with transparency.

Additionally applicant argues that only elastic scattering is occurring within his diffusing medium (i.e., molten lead); however, review of Principals of Nuclear Reactor Engineering, 1955 p. 87-88 reveals lead and bismuth (both of applicant's diffusing medium materials) as behaving like light nuclei with respect to inelastic scattering. Thus it appears that applicant's definition of transparency with respect to the diffusing medium is not considered to be the accepted standard. Therefore the specification is insufficient in defining how and in what manner applicant achieves only elastic scattering in his diffusing medium when the prior art indicates that the materials in question (lead/bismuth) act as inelastic scatterers.

Thus, for the reasons set forth above the examiner has set forth a reasonable and sufficient basis for challenging the adequacy of the disclosure. The statute requires the applicant itself to inform, not to direct others to find out for themselves; In re Gardner et al, 166 U.S.P.Q. 138, In re Scarbrough, 182 U.S.P.Q. 298. Note that the disclosure must enable a person skilled in the art to practice the invention without having to design structure not shown to be readily available in the art; In re Hirsch, 131 U.S.P.Q. 198.

### ***Claim Rejections - 35 USC § 112***

6. Claims 1-9, 12, 17-25, 28 and 31-32 are rejected under 35 U.S.C. 112, first paragraph for the reasons set forth in section 5 above.

Art Unit: 3641

7. Claims 1-9, 12, 17-25, 28 and 31-32 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Referring particularly to the use of the term "inner buffer region" and "outer buffer region" the use of such language is not supported in the specification. Furthermore such only adds to confusion. Note that per the specification and drawings there are two distinct and separate buffers. While the buffers can be the same material they are separate. This is evident by the activity volume (thin tubes) located between the two buffer layers. From the specification and drawings (figure 7b) there appears to be no intermixing of the two buffers. The claim language reads on a single buffer having an inner and outer layer or region. Clearly, this is not the case. Applicant needs to revise his claims to be consistent with his claimed intent. Two separate and distinct buffers having diffusing medium located therein.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-9, 12, 17-25, 28 and 31-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. The term "portion" in claims 1, 3, 4, and 17-19 is a relative term which renders the claim indefinite. The term "portion" is not defined by the claim, the specification does not



Art Unit: 3641

provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. As set forth above there are two separate and distinct buffers having diffusing medium therein. As is the claims are indefinite.

b. The term "inner buffer region" in claims 1 and 17 is a relative term which renders the claim indefinite. The term "inner buffer region" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. As set forth above there are two separate and distinct buffers having diffusing medium therein. As is the claims are indefinite.

c. The term "outer buffer region" in claims 5 and 20 is a relative term which renders the claim indefinite. The term "outer buffer region" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. As set forth above there are two separate and distinct buffers having diffusing medium therein. As is the claims are indefinite.

d. With regard to the term transparency the claims are vague, indefinite and incomplete, particularly in regard as to what is meant by and encompassed by the term.

Applicant argues (12/5/2003) the definition of transparency as being mostly elastic scattering reactions occurring in his diffusing medium.

Art Unit: 3641

The examiner disagrees. As set forth above in section 2, applicant is correct in citing the MPEP § 2173.05(a) wherein the specification states the meaning that a term in the claim is intended to have, the claim is examined using that meaning applicant must remember that the term used cannot be repugnant. However, applicant cites only a portion of the claimed transparency definition. Pages 2-3 disclose two steps (1) and (2). Step (1) (page 3, lines 3+) further cites a doping of the diffusing medium making it “cloudy” and consequently allowing for neutron capture by the subject impurities. Thus, as specified by applicant’s own specification neutron capture is occurring within the diffusing medium. Therefore the diffusing medium is truly not elastic.

Per A glossary of Terms in Nuclear Science and Technology, 1957 the term transparency is defined as being to permit the passage of radiation particles. No mention of elastic or inelastic scattering is present in the definition. While applicant may be his or her own lexicographer, a term in a claim may not be given a meaning repugnant to the usual meaning of that term. See In re Hill, 161 F.2d 367, 73 USPQ 482 (CCPA 1947). Thus based on the prior art definition of transparency the diffusing medium of Bowman is capable of meeting applicant’s claimed inventive concept.

Art Unit: 3641

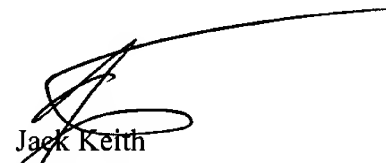
*Conclusion*

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack Keith whose telephone number is (703) 306-5752. The examiner can normally be reached on Monday through Friday from 7:00 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone, can be reached on (703) 306-4198.

The fax phone number for the organization where this application or the proceeding is assigned is (703) 305-7687. Fax number for submittals before Final is (703) 872-9326, After Final is (703) 872-9327 and customer service is (703) 872-9325.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.



Jack Keith  
Examiner,  
Art Unit 3641

jwk

January 29, 2004